

## HUMAN ANTIBODY FOR DEPLOYING CH2 BASED THERAPEUTICS

### SUMMARY

A human antibody (anti-CH2 Fab m01m1) which could be used safely in vitro and in vivo for the detection of CH2 (Fc and IgG as well).

### REFERENCE NUMBER

E-245-2012

### PRODUCT TYPE

- Research Materials

### KEYWORDS

- Research Tool
- Antibody
- CH2
- IgG
- effector functions
- conformational epitope

### COLLABORATION OPPORTUNITY

This invention is available for licensing and co-development.

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### DESCRIPTION OF TECHNOLOGY

The National Cancer Institute's [Cancer and Inflammation Program](#) seeks parties to co-develop or license fully human antibodies for CH2-based diagnostics or research materials.

Recently, isolated immunoglobulin constant CH2 domains were proposed as scaffolds for construction of libraries containing diverse binders that could confer some effector functions. As a fragment in all IgGs, which are at high concentrations in blood, CH2-based therapeutics are likely to be well tolerated in therapeutic concentrations. CH2 binders can also be engineered to be selective so as to retain some of the effector functions that are possessed only by IgGs and not by other scaffolds.

NCI scientists discovered a novel fully human antibody (anti-CH2 Fab m01m1) that could be used safely

*in vitro* and *in vivo* for the detection of CH2 and related targets, such as Fc and IgG. More specifically, anti-CH2 Fab m01m1 recognizes a conformational epitope on CH2 so it can be used to monitor conformational changes in CH2 and to select the proper folded isolated CH2 domains. Anti-CH2 Fab m01m1 is a powerful research reagent for developing CH2-based novel therapeutics (nanoantibodies, nAbs) and for identifying several binders against various antigens from CH2-based libraries.

## POTENTIAL COMMERCIAL APPLICATIONS

- Research reagent
- Facilitate the development of CH2-based novel therapeutics
- Can be used as a library for therapeutic candidates

## COMPETITIVE ADVANTAGES

- A novel fully human antibody for the detection of CH2
- CH2-based therapeutics are likely to be well tolerated in therapeutic concentrations

## INVENTOR(S)

Dimitar Dimitrov, Ph.D. (NCI)

## DEVELOPMENT STAGE

- Discovery (Lead Identification)

## PUBLICATIONS

1. Prabakaran P, et al. Structure of an isolated unglycosylated antibody C(H)2 domain. Acta Crystallogr D Biol Crystallogr. 2008 Oct; 64(Pt 10):1062-7. [[PMID 18931413](#)]
2. Dimitrov DS. Engineered CH2 domains (nanoantibodies). MAbs. 2009 Jan-Feb;1(1):26-8. [[PMID 20046570](#)]
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4. Xiao X, et al. A large library based on a novel (CH2) scaffold: identification of HIV-1 inhibitors. Biochem Biophys Res Commun. 2009 Sep 18;387(2):387-92. [[PMID 19615335](#)]
5. Wozniak-Knopp G, et al. Stabilisation of the Fc fragment of human IgG1 by engineered intradomain disulfide bonds. PLoS One. 2012;7(1):e30083 [[PMID 22272277](#)]

## PATENT STATUS

- **Not Patented:** Patent prosecution is not being pursued.

## THERAPEUTIC AREA

- Cancer/Neoplasm